

# PROPERTY PLANNING COMMON ELEMENTS

## COMPONENTS OF MASTER PLANS

### HABITATS AND THEIR MANAGEMENT

#### Warmwater Rivers and Streams

##### *Description*

This page covers management of warmwater rivers and streams. Warmwater rivers are flowing waters with maximum water temperatures typically greater than 25 degrees Celsius (77 degrees Fahrenheit). They usually have watershed areas greater than 500 square miles and mean annual flow rates of more than 200 cubic feet per second. Warmwater rivers occur statewide and include some of the state's largest rivers, such as the Mississippi, Wisconsin, Chippewa, Fox, Wolf, and Rock, as well as smaller rivers such as the Sugar, Baraboo, Milwaukee, Flambeau, and Yellow. Warmwater rivers host a rich fish fauna, dominated by warmwater species in the Cyprinidae, Catostomidae, Ictaluridae, Centrarchidae, and Percidae families.

The floodplains of some of the state's warmwater rivers, particularly free-flowing and/or relatively undisturbed segments, are home to a diverse and sometimes extensive and high-quality mosaic of habitats that can include bottomland and swamp hardwood forests, open-water habitat such as sloughs and oxbows, a variety of open, shrub, or conifer wetlands, barrens, savannas, prairies, and upland forests, as well as features such as islands, sand terraces, bluffs, cliffs, and gorges. These habitats are major repositories of terrestrial and aquatic biodiversity. Natural, periodic flood flows, most often driven by spring snow melt and rains, are important to the health of warmwater river floodplain forests and wetlands and to the maintenance of self-sustaining populations of wetland-spawning fish like walleye and northern pike. The aquatic life dependent on these rivers and their floodwaters also supports a variety of mammalian and avian species. Free-flowing, undammed rivers are a critical factor in the existence and perpetuation of widely distributed populations of certain species, especially sturgeon and several species of mollusks that require a far-ranging fish host to complete their lifecycle. Dams established for a variety of purposes (power generation, navigation, flood control, recreation) have caused notable declines in some mollusks by blocking movements of their fish hosts.

Warmwater streams are flowing waters with maximum water temperatures typically greater than 25 degrees Celsius (77 degrees Fahrenheit) and watershed areas smaller than 500 square miles, with mean annual flow rates of less than 200 cubic feet per second. Warmwater streams are common statewide and particularly concentrated in southeastern and east-central Wisconsin. Warmwater streams host a rich fish fauna, dominated by species in the Cyprinidae, Catostomidae, Centrarchidae, and Percidae families. Streams modified by dams, agricultural drainage, or increased flows due to changes in land cover have lost varying degrees of their original biological productivity and diversity.

##### *Ecological Landscape Opportunities*

Ecological Landscape	Opportunity*	
	Warmwater Rivers	Warmwater Streams
Central Lake Michigan Coastal	M	M
Central Sand Hills	M	I



Ecological Landscape	Opportunity*	
	Warmwater Rivers	Warmwater Streams
Central Sand Plains	I	I
Forest Transition	M	M
North Central Forest	M	M
Northern Highland	M	M
Northern Lake Michigan Coastal	M	M
Northwest Lowlands	M	I
Northwest Sands	M	I
Southeast Glacial Plains	M	M
Southern Lake Michigan Coastal	I	M
Southwest Savanna	P	M
Superior Coastal Plain	I	M
Western Coulee and Ridges	M	P
Western Prairie	M	M

M = Major; major opportunity exists in this Landscape; many significant occurrences are recorded, or restorations likely to be successful.

I = Important; several occurrences important to maintaining the community in the state occur in this Landscape.

P = Present; community is present in the Landscape but better opportunity exists elsewhere.

### ***Rare Species***

Many Species of Greatest Conservation Need (SGCN) are associated with warmwater rivers and warmwater streams based on the findings in [Wisconsin's 2015 Wildlife Action Plan](#). To learn more, visit the [Aquatic communities](#) page and click on "Warmwater rivers" or "Warmwater streams" under "Explore aquatic communities".

### ***Threats***

- Alteration of river/stream hydrology through installation of dams or other water control structures, land cover changes in the floodplain or watershed, channelization, or excessive groundwater withdrawals disrupts natural hydrologic fluctuations and temperature regimes integral to aquatic ecosystems and associated floodplain habitats, destroys stream bank and in-stream habitat, fragments habitat, and prevents movements of some species.
- Runoff carrying sediments, nutrients, bacteria, or contaminants from agricultural areas, construction sites, or developed areas, particularly where these occur on or near river or stream banks, washes into rivers and streams, negatively impacting their water quality and associated plant and animal communities.
- Agricultural activities such as row cropping and grazing on or near river and stream banks destroy stream-side vegetation, cause bank erosion, compaction, and stream widening, and negatively impact water quality.
- Non-native invasive species such as Asian carp, New Zealand mudsnail, and zebra mussel are a threat to warmwater rivers & streams.
- Altered temperature and precipitation patterns associated with climate change are projected will likely have negative impacts on warmwater rivers and streams due to increasing water temperatures and altered flows



(either decreases due to higher temperatures and drought or increases from more frequent, higher-intensity precipitation events which lead to flooding), which may damage aquatic and floodplain habitats, impair water quality, and facilitate the spread of non-native invasive species.

### ***Management Techniques***

- Fish passage practices
- In-stream practices
- Pesticide treatments
- Streambank practices

### ***Management Prescriptions***

- Wherever possible, manage warmwater rivers and streams as part of a complex of interconnected, related habitats (e.g., open, shrub, or forested wetlands, grasslands, upland forests, etc.).
- Maintain site hydrology; restore where appropriate and feasible.
- Where possible and feasible, restore a more natural channel morphology and alignment to streams altered by channelization.
- Where possible, use buffers to protect rivers and streams from negative impacts of surrounding land uses (e.g., sedimentation, pollution).
- Consider site and landscape context when conducting vegetation restoration in riparian corridors, favoring appropriate native species.
- Where necessary, install and maintain department-approved stream habitat enhancements (e.g., bank stabilization, tree-drops) at appropriate sites.
- Address fish passage impairments (e.g., beaver dams, culverts, etc.) to reconnect stream reaches, maintain water flow and fish passage, and to prevent increased water temperatures and sedimentation.
- Consult with Natural Heritage Conservation staff during the planning of in-stream and riparian habitat enhancement projects.
- Obtain all necessary [water permits](#) and/or floodplain hydrologic and hydraulic analyses pursuant to NR 116, Wisconsin Administrative Code, before conducting in-stream or streambank enhancements.
- Attempt to prevent the spread of non-native invasive species into rivers and streams where they currently do not occur. Employ chemical and mechanical methods to control them where they are present.
- Consider potential impacts on rivers and streams when conducting management in adjacent areas, including impacts on groundwater recharge areas, springs, etc.
- Follow Bureau of Fisheries Management guidance on fish stocking rates.

